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10/526,766	11/03/2005	Georg Stoppelmann	STOPPELMANN2	6934
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USELDING, JOHN E				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,766

Applicant(s)

STOPPELMANN ET AL.

Examiner

John Uselding

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 12-16 and 20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 17-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-20 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB08)
- Paper No(s)/Mail Date 7/10/2008
- 4) ☐ Interview Summary (PTO-413)
- Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I, claims 1-11 and 17-19 in the reply filed on 8/7/2008 is acknowledged. The traversal is on the ground(s) that the cited prior does not destroy the unity of invention. This is not found persuasive because the applicant has not provided any reasons as to why the unity of invention is not destroyed.

The requirement is still deemed proper and is therefore made FINAL.

Specification

2. The disclosure is objected to because of the following informalities: While claim 7 mentions "three alkyl or aryl residues" the limitation of 3 is not taught in the specification.

Appropriate correction is required.

Claim Objections

1. Claim 17 is objected to because of the following informalities: claim 17 recites "compound reflector into a for vehicle". The word order is reversed. Appropriate correction is required.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 4 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex parte Wu*, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claim 4 recites the broad recitation "a mesh width of at most 200 μm ", and the claim also recites "preferably 50 μm to 100 μm " which is the narrower statement of the range/limitation.

4. Claim 8 recites the limitation "the exfoliated layered silicates" in claim 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-5 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al. (EP 0885920) in view of Frank (5,217,762).

7. Kojima et al. (hereinafter Kojima) teach a method of making a polyamide nanocomposite. In their method they first mix 100 parts by weight partially crystalline polyamides (page 4, lines 2-11) with an 1-20 parts by weight organically modified layered silicate in a melt (page 3, lines 23--30) and then make pellets (page 4, lines 15-38). Then 10-90% of the reinforced polyamide pellets are then mixed via melt-kneading with 10-90% of a second part of polyamides in a twin-screw extruder followed by pelletizing (page 4, lines 15-39) (claim 1). Given the above ranges the first parts comprises 83-99% polyamide and 1-17% layered silicate. The second part comprises 0.1-15.3 wt% of the layered silicate (claim 5). They teach using nylon 6 (also known as PA 6) as the first (page 3, lines 5-7) and second (column 4, line 2) polyamide (claim 9). They also teach that the partially crystalline polyamides can be admixed with a

component of amorphous polyamide (page 3, lines 7-28 and page 4, lines 2-11) (claim 10). Kojima teach using phyllosilicates of the three-layer type (column 3, lines 23-28) (claim 11). One example would be montmorillonite, which the applicant teaches is a phyllosilicate of the three layer type (2:1) (paragraph 0022). They teach that their composition can be injection molded into exterior parts of automobiles such as light covers or any field where the excellent characteristics of mechanical strength, flexural modulus, heat resistance, and weld strength can be taken advantage of (page 5, lines 10-26).

8. Kojima fail to teach the same order of addition for the adding the components to the double screw extruder. They teach adding the first polyamide and layered silicate into the double screw extruder at the same time instead of first melting the polyamide and then adding the layered silicate. The selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See MPEP 2144.04.

9. Kojima fail to teach that same range for the first polyamide and layered silicate (claim 5). 83% is very close to 80% and 17% is very close to 20%. A *prima facie* case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. *Titanium Metals Corp. of America v. Banner*, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (MPEP 2144.05). The examiner takes the position that these ranges are close enough that one would expect them to have the same properties.

10. Kojima fail to teach the exact same range for the final concentration of the layered silicate. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

11. Kojima fail to teach the size of the layered silicate that is used. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have optimized the size of the silicates depending on the type of reinforcement desired.

12. Kojima fail to teach filtering their melt, the location of the filtration, the step the filtration occurs in, and the mesh size of the filters used.

13. Frank teaches a method of melt processing thermoplastic polymer such as polyamides to reduce the irregularities in extrusion (column 1, lines 16-69). They teach that inserting a filter in line after the extruder to reduce flow irregularities (column 6, lines 1-5). It would have been obvious to have placed the filter either before or after the extruder nozzle in the absence of unexpected results. They teach using a 15 μm filter which is less than 200 μm (column 6, line 25).

14. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the filtration method and size of Frank in the process of Kojima to provide a process of producing a polyamide nanocomposite with reduced flow irregularities. It would have been obvious to have performed the melt filtration during the initial extrusion process or during a separate extrusion process. See above

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for the reasons why changing the order of steps is obvious in the absence of unexpected results.

15. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nagashima et al. (5,910,560) in view of Kojima et al. (EP 0885920) further in view of Frank (5,217,762).

16. Nagashima et al. teach a method of making sub-reflectors for head lamps for cars (column 3, lines 1-3) by injection molding reinforcements and polyamide resins (column 6, lines 40-67). A sub-reflector is a reflector as well.

17. Nagashima et al. fail to teach a polyamide nanocomposite produced according to claim 1.

18. Kojima et al. teach what is listed above.

19. Frank teach what is listed above

20. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the process of Kojima et al. to make the reinforced polyamide to use as the polyamide of Nagashima et al. to make a sub-reflector that has the excellent characteristics of mechanical strength, flexural modulus, heat resistance, and weld strength.

21. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the filtration method of Frank in the making of the polyamide of Nagashima et al. to product a polyamide with reduced flow irregularities.

22. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nagashima et al. (5,910,560) in view of Kojima et al. (EP 0885920) further in view of Frank (5,217,762) further in view of Catlin (5,819,408).
23. Nagashima et al., Kojima et al., and Frank are discussed above.
24. Nagashima et al. fail to teach gas injection molding.
25. Catlin teaches gas injection molding of thermoplastic resins into car parts to provide variable thickness in the adjacent sections in the same mold, and produce stiff lightweight parts. This is taught as an improved alternative to injection molding (column 16, lines 29-35).
26. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the gas injection molding process of Catlin during the injection molding to make the sub-reflector of Nagashima et al. to provide variable thickness in the adjacent sections in the same mold, and produce stiff lightweight parts.
27. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al. (EP 0885920) in view of Frank (5,217,762) further in view of Oswald (4,136,103).
28. Kojima and Frank are discussed above. Kojima et al. teach using a layered silicate, such as montmorillonite, that has been modified by organic salts (page 3, lines 23-30).

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29. Kojima fail to teach using a layered silicate that is organically modified using phosphonium salts of the formula $P-R_4-X$.

30. Oswald teach a phosphonium salt modified montmorillonite (column 12, lines 34-68). It provides thermal stability and reinforcement at the same time (column 3, lines 42-46). They teach that it is modified using phosphonium salts of the formula $P-R_4$ (page 3, line 58). The R substituents is preferably an alkyl or substituted alkyl with 40 carbons (column 3, lines 65-66). The alkyl can be substituted with a Cl, Br, or I (column 4, line 8). The phrase "three alkyl or aryl residues" can be interpreted in a multitude of ways. The examiner takes the position that the applicant is referring to an alkyl group that has at least 3 carbon atoms. Any number of carbons over three can just be divided into 3 separate alkyl groups. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have selected at least 3 carbons from the 3-40 carbon range and substitute the alkyl with a Cl, Br, or I. Oswald also teaches montmorillonite modified by trialkyl phosphonium chlorides (column 13, lines 48-49).

31. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the montmorillonite modified with a phosphonium salt of Oswald as the montmorillonite modified by an organic salt of Kojima to provide both reinforcement and thermal stability to their composition.

32. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al. (EP 0885920) in view of Frank (5,217,762) further in view of Vaia et al. (6,225,374).

33. Kojima and Frank are discussed above. Kojima et al. teach using a layered silicates, such as montmorillonite, modified by organic salts (page 3, lines 23-30).
34. Kojima fail to teach the size of the layered silicate that is used.
35. Vaia teach montmorillonite (column 1, line 61) modified by organic salts column 3, lines 20-25). They teach that the particle size of the silicate, at the largest dimension, is 10 nm to 25 microns. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the silicate size of Vaia in the composition of Kojima since it is a simple substitution of one known element for another to obtain predictable results. It would have been obvious to have optimized the size within the range of Vaia such that the smallest dimension was at most 100 nm.
36. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kojima et al. (EP 0885920) in view of Frank (5,217,762) further in view of Vaia et al. (6,225,374), as evidenced by Oswald (4,136,103).
37. Kojima and Frank are discussed above. Kojima et al. teach using a layered silicates, such as montmorillonite, modified by organic salts (page 3, lines 23-30).
38. Kojima fail to teach the same wt% for the first part of the polyamides and layered silicates. They also fail to teach the exact same range for the final concentration.
39. Vaia teach polyamide compositions (column 2, lines 32-35) comprising montmorillonite (column 1, line 61) modified by phosphonium salts column 3, lines 20-25). They teach that the silicate to polymer weight ratio ranges from 1:1000 to 100:1.

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40. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the phosphonium salt modified montmorillonite of Vaia using the particle size and range of Vaia in the composition of Kojima and selected the overlapping portions of the range of Vaia and applicants range. Kojima state that they don't use more than 20 parts by weight of the layered silicate because above that value there is no improvement in weld strength. However, when using a phosphonium salt modified silicate an increase above that value can increase the thermal stability of the composition as evidenced by Oswald. Oswald is being used as an evidentiary reference to prove that adding phosphonium salt modified montmorillonite improves the thermal stability of a composition. This is the motivation that Kojima would have to go above 20 parts by weight. They list no negative effects when going over 20 parts by weight.

41. As for the final concentration of the silicate. The subject matter as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made, since it has been held that choosing the overlapping portion, of the range taught in the prior art and the range claimed by the applicant, has been held to be a *prima facie* case of obviousness, see *In re Malagari*, 182 USPQ 549.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Uselding whose telephone number is (571)270-

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5463. The examiner can normally be reached on Monday-Thursday 6:00a.m. to 4:30p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on 571-272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ling-Siu Choi/
Primary Examiner, Art Unit 1796

John Uselding
Examiner
Art Unit 4171

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